DMP NETWORK MONITORING™ OPTIONS

Application Note

INTRODUCTION

DMP forged the way to a new era for the security and fire alarm industry with the first UL certifications for Network Monitoring™ for burglary in 2001 and for Commercial Fire in 2002. The ability to monitor alarm signals over the Internet offers many advantages for central stations and alarm subscribers. Data transmission is secure, extremely fast, and fully supervised. DMP offers all of this value at a significant cost savings over traditional dial-up or dedicated line communication.

Sending alarm and system information to a central monitoring station through the Internet is not only superior to analog communication, but it is also a communication method approved and accepted by Underwriters Laboratories (UL) for Standard Line Security and for Commercial Fire using the communication protocol patented by DMP and protected under U.S. Patents 6,040,770 and 6,255,945. Before you configure your panel or central station for Network Monitoring, determine whether it must comply with Standard Line Security or ANSI/UL 864 Commercial Fire.

All DMP XT Series and XR Series panels offer built-in network options.

Each DMP SCS-104 Network Line Card is capable of monitoring 3,200 accounts that require check-in or up to 65,535 accounts that do not require check-in.

This document demonstrates how to take advantage of the options for Network Monitoring using existing corporate Data Networks and the Internet.

DMP XR Panel

Data Network

DMP XR Panel

SCS-1R/SCS-VR Digital Central Station Receiver
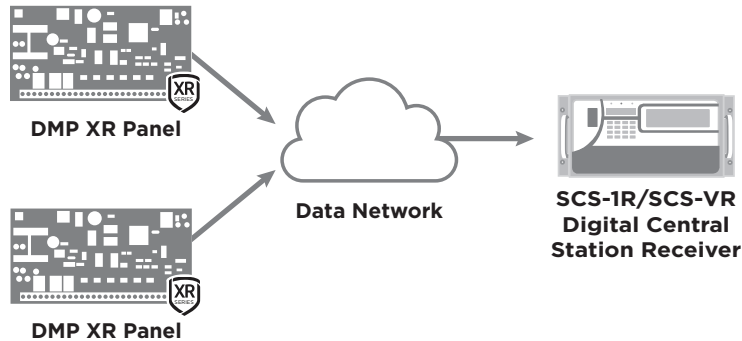
THE NETWORK MONITORING™ ADVANTAGE

Network Monitoring offers a significant advantage for both central stations and alarm customers in terms of savings, speed, quality of service, and security.

Savings

By using a full-time Internet connection, company internal LAN/WAN, or Point of Sale (POS) network already available in many business locations, the costs of adding and maintaining an additional phone line are avoided, as are any long-distance charges between the panel and central station. Using Network Monitoring with DMP equipment, central stations can increase their Recurring Monthly Revenue (RMR) by offering Standard Line Security and Commercial Fire monitoring to a national or international area without the expense of a private leased line for each account.

Speed

Central stations gain an advantage through Network Monitoring speed. Dial-up alarm transmissions average from 5 to 45 seconds. The typical time needed for a Network Monitoring alarm transmission is 50 to 70 milliseconds. In cases where each second counts, Network Monitoring allows the fastest possible alarm responses.

Quality of Service

Network Monitoring allows central stations to offer customers increased quality of service. If a panel at each location attempts to communicate an opening report over a traditional phone line, it is possible for some panels to receive a busy signal from the central station receiver. Because Network Monitoring communication occurs in a matter of milliseconds, many more accounts can communicate with the receiver in a short period of time.

Security

Risk to central station receivers is minimal with Network Monitoring. If you compare the risks of Network Monitoring to the risks traditionally associated with the Internet, the most common hacker targets do not exist. Network Monitoring reduces risks due to:

- Root access can be restricted to Local Only
- Operates using single-purpose devices
- No web site to deface
- Does not accept e-mail or executable files (the most common way to distribute viruses)
- Receiver operating system does not accept commands from host communication
- Proprietary operating system and alarm message format that is unfamiliar to hackers

Furthermore, it would be extremely difficult for a hacker to break into a panel or central station receiver through the Network Monitoring connection because several pieces of unfamiliar information are required to gain access.

A potential hacker would have to know all of the following:

- Account number
- IP address
- Port number used by system
- Panel secret remote key
- DMP proprietary communication protocol

How to Further Minimize the Risk

Just as with any other form of central station communication, there are measures you can take to improve your security and reliability level.

- Use a packet-filtering network router
- Restrict the panel root access to Local Only
- Consider a backup ISP provider
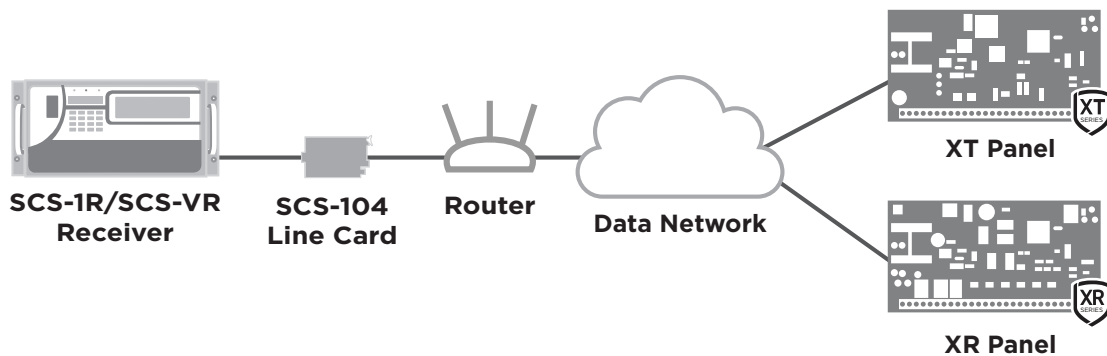- Use strong passwords consisting of both letters and numbers

Figure 1:   Network Monitoring Schematic

DMP NETWORK COMMUNICATION

DMP offers multiple solutions for Network and Internet communication to meet your needs. The XT Series and XR Series panels offer built-in network communication. These products provide fully supervised, two-way network communications for the specified panels.

The built-in network capabilities of the XT Series and XR Series panels let you simply connect your Internet cable directly to an available Ethernet connection. These panels can communicate alarm and system messages over a full-time Internet, LAN, or WAN Ethernet network connection to a DMP SCS-1R Receiver or SCS-VR Virtual Receiver.

All these products offer state-of-the-art network communication by sending alarm data to the central station using either UDP (User Datagram Protocol) or TCP (Transmission Control Protocol) communication. DMP Network Monitoring™ is extremely fast, fully supervised, and provides reliable, high-security communication. UDP and TCP are completely compatible with existing Internet connection methods such as Frame Relay, ISDN, DSL, cable, satellite, or virtually any other connection method.

The UDP encapsulation low-overhead and reverse-polling technology allow you to connect the alarm system to the subscriber's existing Internet connection with no impact on network performance. Also, the UDP protocol accommodates either simple firewall or proxy server configurations.

TCP enables two hosts to establish a connection and exchange data streams. TCP guarantees data delivery which guarantees packets are delivered in the same order in which they were sent.

Message authentication is processed through a proprietary authentication scheme, making the technology inaccessible to the hacker world, unlike potential weaknesses of common operating systems as described on hacker websites. This provides a more secure system when connecting to the Internet.

At the protected premise, installing the appropriate DMP technology is fast and easy. Simply use standard keypad programming to configure the XT Series and XR Series panels. These panels also support DHCP and NAT (Network Address Translation) and can be remotely tested and configured. Remote programming is protected by a strong 8 to 16 character password.

PANEL OPERATION

The XT Series and XR Series panels have a built in Ethernet connector.

XR150N, XR350N, XR550N, and XR550E built-in 10/100BaseT auto-sensing Ethernet connection enhances both standard and encrypted line security options.

Simply connect your Internet cable directly to the panel. This allows the panels to communicate alarm and system messages over a full-time Internet, LAN, or WAN Ethernet network connection to a DMP SCS-1R Receiver, DMP SCS-VR Virtual Receiver or a computer running DMP Alarm Monitoring™ software.

Figure 2: XT Series and SCS-1R Receiver

Figure 3: XR Series and SCS-1R Receiver

NETWORK MONITORING AT A CENTRAL STATION

To configure your SCS-1R Central Station Receiver for Network Monitoring you need the following items:

- SCS-1R Receiver with SCS-150 Processor
- SCS-104 Network Interface Card or SCS-101 Network Interface Card (level B or higher)
- SCS-104 v100 or higher at 10/100BASE-T Networks or SCS-101 at 10BaseT Networks.
- Full-time Internet connection

SCS-VR

The SCS-VR is a software-only central station virtual receiver for network IP and Cellular alarm communications.

- Manages all network and cellular alarm signals, supervision, and substitution messages
- Can be used as primary receiver(s) or backup to existing hardware receivers
- Advanced diagnostics ensures more reliable service and faster troubleshooting
- Full logging of diagnostic data
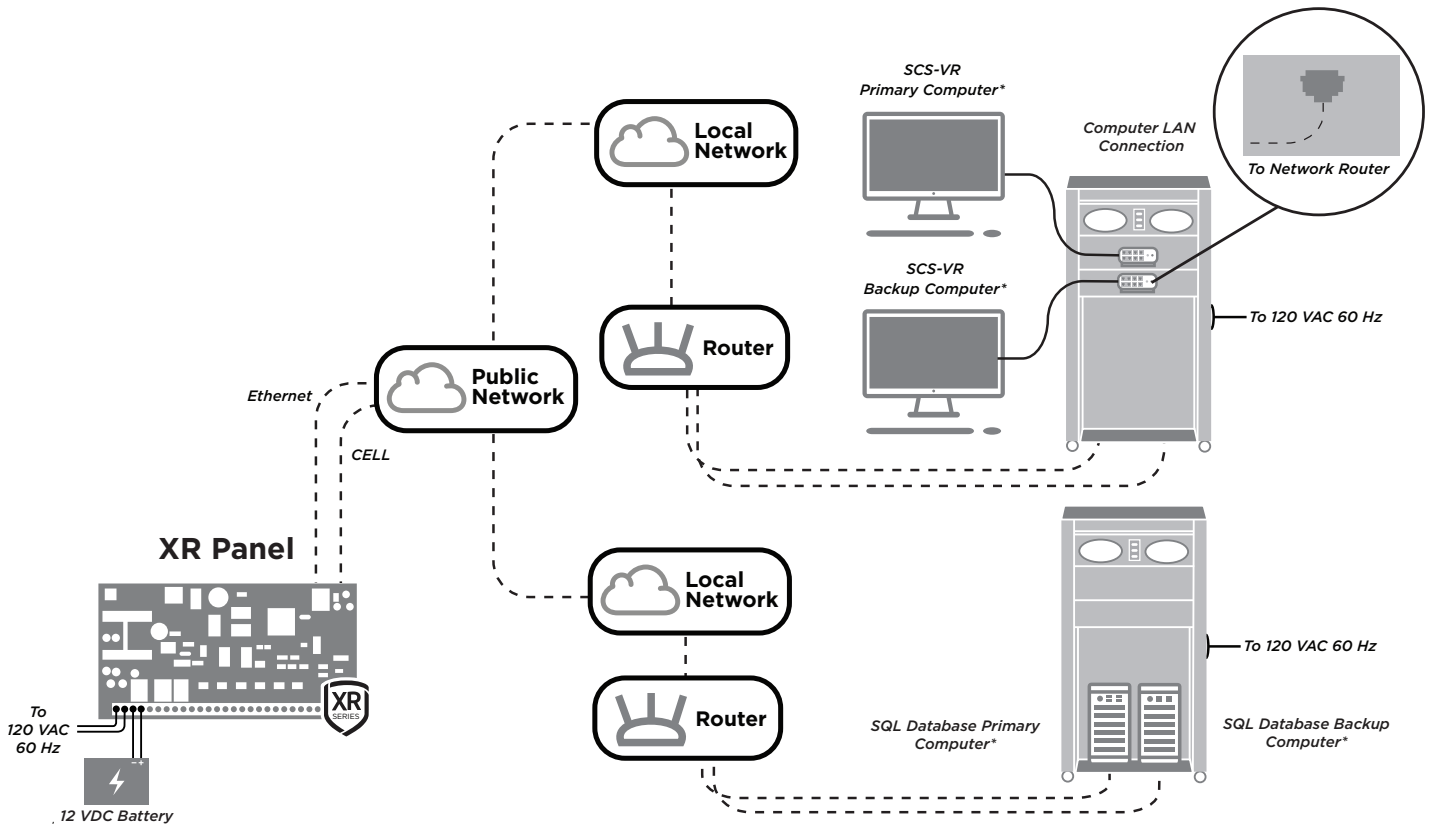- UL Approved for Commercial Burglary and Commercial Fire and CSFM for Central Stations

Figure 4: XR Series and SCS-VR Receiver Configuration

SCS-1R with SCS-150 Main Processor Card

The SCS-1R receiver offers many features and enhancements. The SCS-150 Processor contains the firmware for system operation, provides all time-keeping functions, and controls line cards, keypad, and printer. The new, faster card design offers a range of technology enhancements, including:

- 5,000-event memory
- Remote Panel programming via receiver line cards using Auxiliary port
- Receiver system setup programming via SCS-1R keypad/display and graphical user interface
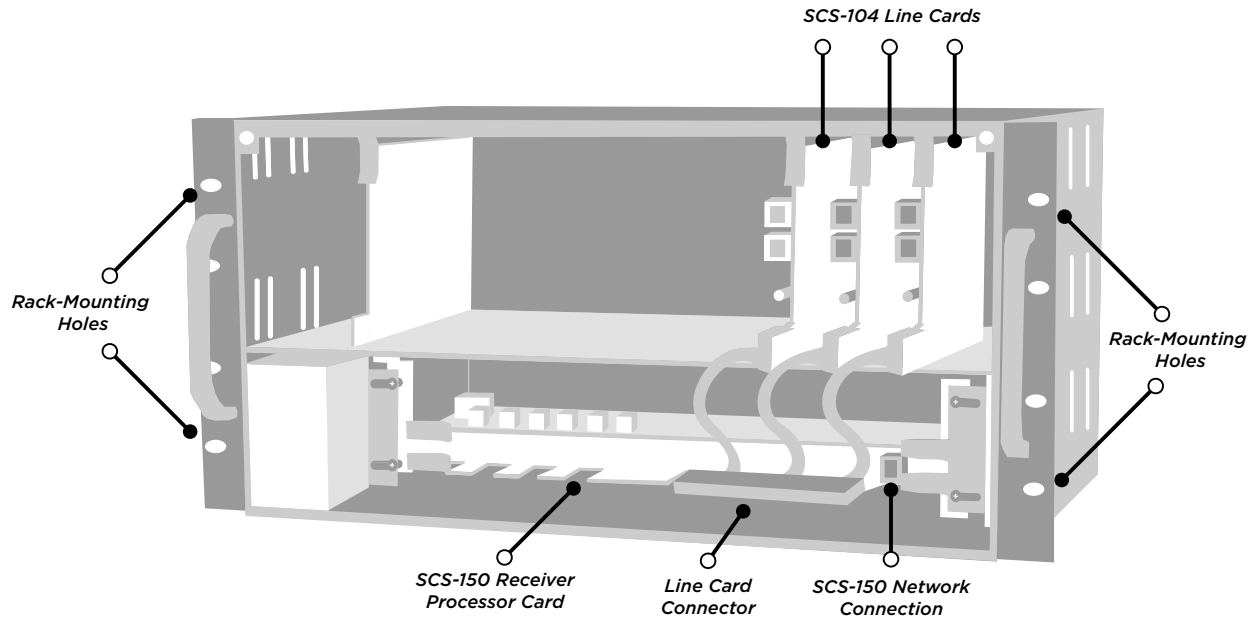- Receiver software is updatable using an SD card instead of EPROMs

Figure 5: SCS-1R Receiver with SCS-104

SCS-150 Compatibility

The SCS-150/CONVERT (conversion kit) is fully compatible with existing SCS-1R receiver racks with SCS-1062 CPU, power supplies, and line cards, and comes with all internal cables needed for installation in the SCS-1R receiver.

What the System Administrator Needs to Know

The system administrator needs the following information to allow Network Monitoring signals to pass through a network firewall. Both incoming and outgoing signals pass through these settings. The port number is programmable and the system administrator may assign a different number. The default Port number is 2001 and the Protocol is TCP. As required, UDP operation is available and must be programmed in the Panels.

Internet Access Requirements

Several options are available for suitable full-time Internet connections, such as T-1, cable, DSL, or satellite dish.

Be sure to obtain Internet access from a high-reliability source to assure maximum up-time. The same Internet access that monitors your security and fire panel can also be used to provide broadband Internet access for other uses, such as Internet access, e-mail, or a web server.

The DMP Advantage

Bringing your systems on-line using DMP products and technology offers several advantages over trying to accomplish the same thing with another manufacturer's product.

1. Connection, configuration, and operation simplicity — Bringing your DMP system on-line is as simple as connecting any other workstation or printer to the network.

2. A DMP system using the XT Series panels or XR Series panels is truly a two-way communicator — Anything you normally do locally you can do remotely, such as manage user codes and arm or disarm any or all system areas. This is not one of those "spoofed" systems that connects to your security systems dialer connection and emulates a receiver. Those systems are only one-way. The DMP XT Series panels or XR Series panels two-way systems put you in total control of the information you need.

3. A DMP Security System is network friendly — DMP systems connect at the same point as any other computer or printer. This is much safer for your network. Connecting a DMP system is as safe and non-intrusive as adding any other "dumb terminal" to your network.

4. Information System department advantage — DMP products have minimal impact of your network bandwidth. The patented DMP NET format uses a reverse-polling technique for system supervision. This is far superior to the typical but inefficient forward polling systems that are constantly sending information across your network.

Bandwidth Usage

You may place up to eight SCS-104 Network Interface Cards in an SCS-1R Receiver with the SCS-150 processor board. Each can manage up to 3,200 accounts that require check-in. With eight network interface cards installed, up to 25,600 accounts that require check-in can be managed by a single SCS-1R.

MESSAGE AND TRAFFIC INFORMATION	SIZE
Smallest Message per panel	18 Bytes
Largest Message per panel	93 Bytes
Most Frequent Message per panel (used for supervision)	23 Bytes
Opening/Closing Reports per panel (2 areas, 1 open and 1 close each per day)	284 Bytes
Average amount of traffic per day per panel (Based on a 2 area system, armed 15 hours per day)	5,324 Bytes
Average daily traffic for 200 locations (From the monitoring station)	1.1 MBytes

Recommended Number of Standard Line Network Accounts

Network Monitoring with DMP equipment also allows you to make the most efficient use of your Data Network and Network bandwidth. Each data transmission across the Data Network between a DMP panel and an SCS-1R Receiver is small and efficient. The table above shows the bandwidth required to monitor 200 network systems using DMP equipment. This table does not include the overhead imposed by Ethernet TCP or UDP protocols.